

Tool device

This invention concerns a tool device, or tool carrier that includes two sides and two axles extending between these and on the axles one or several tools or tool holders journaled pivotable on one or both of the axles. The sides are advantageously elongate with the tool axles in each end of the sides so that combination tools are formed. Examples of this are pocket knives that can include different work tools as knife, can-opener, corkscrew etc. The corkscrew is pivoted on a third centrally placed axle so that it extends about 90° from the main body of the tool and the corkscrew and the main body of the tool constitute a T-handle for the turning of the corkscrew.

As everyone knows, who has tried to use a corkscrew of this kind to pull up a cork, the probability is great for the corkscrew trying to fold in and the corkscrew as such is not very practical, and in particular not if the turning has to be done with precision.

Combination tools are also desired in other situations, for instance the mounting and removal of calks or frostnails on horseshoes. Such a tool require with necessity, in addition to one or several box wrenches, a thread tap to repair the threads in the shoes for the calks. At the use of a thread tap precision as well as the possibility to achieve a turning movement with great torque is required. Here the pocket knife version is not suitable, instead here as for other purposes a combination tool with greater stability and torque is desirable.

The achieving of a tool device or a combination tool that can form a stable T-construction is thus desirable and the object of the invention is therefor to achieve such a solution.

In accordance with the invention this object is solved by the tool carrier being provided with a cover on each side of the tool carrier, each being journaled on one each of the axles extending between the sides. By the extending of one cover or the other tools journaled on the axles can be extended and then fixed to their positions by means of the covers.

This locking can in a first version take place by one of the covers being pivotable close to 180°, so that a tool, journaled on the same axle that has been pivoted out in the opposite direction by a pivoting away of the other cover, can be fixed between the ends of the two covers when the first mentioned cover is maximally pivoted outward. In this way a T-tool is formed with great levers, that is entirely stable in the force transferring direction.

The tool may for instance be a thread tap for the re-threading of calk holes in horseshoes.

Tools may also be fixed to their positions between the covers in the closed positions of these by the end edges of the covers cooperating with contact surfaces on the tools that so to say can lock extended tools between them. Advantageously the covers may also be provided with snap means in the form of an end tab or flange that resiliently can cooperate with the tools so that the locking position of the covers is fixed. The use positions of the covers, including the folded position, may if desired be possible to fix by means of snap means that cooperate with means on the covers.

Further advantages and characteristics of the invention are apparent from the following description of an embodiment shown on the enclosed drawings, in the shape of a combination tool for calk handling at horseshoes. In the figures 1 to 3 the combination tool is shown opened with its different tools and figs. 4 to 8 show the combination tool with different tools extended and fixed, which tools extend in the length direction of the tool, in figs. 9 to 12 the extending and fixing of a thread tap is shown, in fig 13 the tool carrier is shown in yet another position of use and in fig. 14 the folded combination tool is shown.

As is apparent from the drawings the combination tool consists of two sides 1 and 2 that are connected with two axles 3 and 4. On the axle 3 a cover 5 is journaled and on the same axle a thread tap 6 is pivotably journaled. On the other axle 4 a second cover 7 is journaled together with a knife 8, a hoof pick 9, two fixed keys 10 and 11 and a pointed tool 12 arranged, the latter for picking of hard sitting clay, gravel etc. from threaded holes in the horseshoes where calks are to be mounted. The thread tap 6 is intended for the restoration of the threads when they have been damaged, for instance due to pebbles being pushed into the holes in non-calked condition of the shoe.

In the context may be mentioned that calks or frostnails has to be mounted and dis-mounted rather frequently. For instance one can not allow the horses to travel with calks in transports since they on one hand can tread on themselves and on the other hand can damage floor and floor coating. Often the horses may not be allowed to go loose together with other horses without removal of the calks since they then also easily can harm each other. Furthermore the type of calk that is used must be adapted to the ground, for instance longer calks are used to get a good grip on gras, while short calks with hard metals tips are used on icy winter roads.

In figs. 4 to 8 is shown how the different tools that are journaled in the thin end of the

tool by a lifting of the cover 5 that is journaled in the thicker end of the tool have been extended. Thereafter the cover journaled in the thicker end has been swung back and pressed in behind a shoulder 13 present on every one of the tool brackets. On the opposite side of the tool a corresponding shoulder is present that is in contact with the edge of the cover journaled on the same side. With the covers closed thus a very stable holding of the tools is achieved. Since the shoulders 13 are arranged so that the covers 5 and 7 become tangential to the shoulders 13 the locking becomes very efficient. One does not risk that the knife folds over the fingers and in particular at the use of the two fixed keys 10 and 11 a long torque lever and a sturdy hand grip is obtained for the tightening or loosening of calks that essentially simplify this operation. The calks must be tightened forcefully in order to ensure that they remain and they may sometimes require even larger forces when they are to be loosened. If one at the use of the fixed keys turn the combination tool so that the force transfer is to the cover that is journaled in the same end as the key even the other cover can be extended so that the lever becomes even longer. Here however one has to be very careful and hold shoe or hoof fast since the turning otherwise may damage the joints of the horse.

In figs. 9 - 12 is shown how the combination tool is opened at the use of the thread tap 6. Both covers are swung out and the thread tap is swung in the opposite direction to the cover 5 journaled in the same end (fig 10). The second cover or lid 7 is brought back to its closed position, while the cover that is journaled on the same axle as the thread tap is pivoted further in the opening direction, that is opposite to the thread tap, until this cover is more or less in line with the cover journaled in the narrow end. In the ends of the covers now facing each other semicircular recesses 14, 15 are arranged that precisely envelop the thread tap 6 that in this way has its position guided as well as supported. Bending forces do not only have to be taken by the fastening in the journaling on the axle but forces can also be taken by the covers. In this way the strains on the fastening of the thread tap is considerably lessened and reduce the risk that this becomes loose or damages occur. The thread tap is advantageously removable from a holder for instance by easing off and tightening an Allen screw. The Allen screw may either work against a flat surface on the square key-grip in the end of the thread tap alternatively against one of the corners. In connection with fig 5 can also be noted that one does not only achieve a T-handle for the thread tap but also a T-handle with large width and long torque levers so that the turning of the thread tap becomes easy and simple.

If so desired, and the thread tap is only used to clean the hole and not to correct the threads, tool and handle may be folded so that the thread tap simply extends axially from the tool, however this position is not very stable.

5 In fig 6 is shown how only the cover 5 that is journaled in the larger end of the combination tool is pivoted out. Two square holes 16, 17 in this cover can now be used as keys and a good lever is achieved.

In fig 7 is shown how the tool is folded. Also in this position the holes 16, 17 in the cover journaled in the larger end may of course be used for tightening or locking of calks.

10 By arranging elastic washers 18 between the different parts journaled on the axles it is possible to guarantee that a friction force is always present so that the tools and the covers respectively retain their positions. Furthermore one can conceive to provide the covers and sides with cooperating protrusions and/or depressions so that these snappingly can grip into each other in the closed position and the position respectively where one cover, in this case the cover journaled in the larger end, is extended fully to be essentially in line with the other cover.

15 In the shown embodiment the thread tap as well as the corresponding recesses in the covers are placed centrally, which makes the work with the thread tap easier. If so should be desired however further thread taps or other tools may be arranged on the same axle and with corresponding recesses in the covers in order to allow T-handle-use. One can also consider the recesses being triangular so that they may not only constitute a support for a thread tap but also allow the gripping of for instance square calks with different width, where the covers together form a pliers-like device that can be pressed together by the cover journaled in the wider end being pressed against the T-handle position.

20 The above described tool device use different manners of locking in the two ends, one can however if so is desired use the same locking manner in both ends.

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